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EXAMINER	
AUSTIN, AARON	

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1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,722	PARSON ET AL.	
	Examiner	Art Unit	
	AARON S. AUSTIN	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☒ Claim(s) *1-3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/17/06,6/20/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1-3 are objected to because of the following informalities: the claims do not separate the elements by line indentation. Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. 37 CFR 1.75(i), MPEP 608.01(m).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, claim 3 requires that the heat exchange fins comprise “a second aluminum alloy comprising 0.9 to 1.5% by weight manganese, an alloy of the AA3003 type, and at least 0.5% by weight zinc". However, as AA3003 alloys contain Mn by definition and further may contain Zn, it is unclear as to whether the claims' recitation of these elements is in addition to or including the amounts found in the AA3003 alloy composition. In looking at the specification for guidance, one of ordinary skill in the art would note the original claim recites the second aluminum alloy is selected from an alloy comprising Mn and an alloy of the AA3003 type, with either having the claimed amount

of Zn, rather than citing them in the same alloy (original claim 5 and claim 3 of the Article 34 amendment). Further, the specification points to the second alloy as containing "about 0.9 to 1.5% by weight Mn and at least 0.5% by weight Zn, **or** an aluminum alloy of the AA3003 type, with the second alloy further containing at least 0.5% by weight zinc" (emphasis added; page 5, line 29 to page 6, line 2). From this description as well as the claims as originally filed it would appear the fin composition is either 1) an aluminum alloy containing Mn and possibly Zn, or 2) an AA3003 alloy (an aluminum alloy containing Mn and possibly containing Zn) wherein the Zn content is at least 0.5% by weight. As this definition appears to be in conflict with the present claimed definition of the fin composition, and as the claimed composition is unclear as set forth above, the claim does not point out and distinctly claim the subject matter which Applicant regards as the invention as set forth in the specification.

The remaining claims are rejected as they are dependent on a rejected claim.

For purposes of examination claim 3 is read with its broadest interpretation, particularly in light of the teachings of the specification, such that the claimed amounts of Mn and Zn are considered to include the amounts of these components in the AA3003 alloy.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by Kawabe et al. (US 4,991,647).

Kawabe et al. teach tubular elements of a heat exchanger made of an aluminum alloy. The aluminum alloy comprises Si, Mn, Fe, Ti, Cu, and Al in amounts overlapping the claimed ranges (column 1, lines 51-58). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of “0”. As such, the presence of these remaining elements is not required as claimed. The alloy may be extruded into the shape of tubing (column 3, line 29) and brazed to fin members (Example beginning at column 4).

Claim Rejections - 35 USC § 102 and 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kawabe et al. (US 4,991,647).

Kawabe et al. teach tubular elements of a heat exchanger made of an aluminum alloy. The aluminum alloy comprises Si, Mn, Fe, Ti, Cu, and Al in amounts overlapping the claimed ranges (column 1, lines 51-58). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of "0". As such, the presence of these remaining elements is not required as claimed. The alloy may be extruded into the shape of tubing (column 3, line 29) and brazed to fin members (Example beginning at column 4). Further, the alloy is homogenized which is considered to produce the equivalent product to the claimed product which is homogenized at a particular temperature range (column 4, line 24).

Please note, claim 1 contains product by process language. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between

the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Claims 3-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kawabe et al. (US 4,991,647) in view of Koisuka et al. (US 4,620,590).

Kawabe et al. teach tubular elements of a heat exchanger made of a first aluminum alloy as described above.

Regarding claim 3, the fin members comprise a second aluminum alloy containing Si, Fe, Cu, Mn Zn, and Al in amounts overlapping those found in an AA3003 type alloy (column 1, lines 58-68). For this comparison Koisuka et al. is provided as a teaching reference as they teach the composition of an AA3003 alloy at column 1, lines 46-48. With respect to the claimed increase in Zn, Kawabe et al. teach Zn is present in the range of 0.1 to 2.0 wt % (column 1, lines 62-63). As like materials are used in a like manner as claimed, the tubes are expected to exhibit corrosion protection and the fins are expected to be galvanically sacrificial as claimed.

Regarding claim 4, the tubular elements include a Mn content of 0.2 to 1.5 wt % (column 1, line 53) and the fin members include a Mn content of 0.2 to 1.5 wt % (column 1, lines 60-61). Therefore values within these ranges are taught that fulfill the claimed relationship in Mn content. For example, a Mn_{fin} content of 1.0 wt % would fulfill the claimed relationship for any value of $0.2< Mn_{tube} <= 1.5$ wt %.

Regarding claim 5, the Cu content is 0.05 wt % or less (column 1, line 66).

Regarding claim 6, as like materials are used in a like manner to the claims, the galvanic current from fin to tube is expected to be as claimed.

Regarding claims 7-8, the Mn content of the tube forming first aluminum alloy is 0.2 to 1.5 wt % (column 1, line 53).

Claims 1-2 are rejected under 35 U.S.C. 103(a) as obvious over Bjorneklett et al. (WO02/090031) in view of Applicant's admissions and Kawabe et al. (US 4,991,647).

Bjorneklett et al. teach strong and durable aluminum alloy brazing sheets used to form tubes for heat exchangers. The aluminum alloy comprises Mn, Si, Fe, Zn, Cu, Ti, and Al in amounts overlapping the claimed ranges (page 5, lines 6-13). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of "0". As such, the presence of these remaining elements is not required as claimed. The alloy may be brazed to fin members.

While Bjorneklett et al. teach homogenizing is not used when providing the core alloy with the brazing layers (page 10, lines 13-15), they do not teach extruding or homogenizing the tube alloy at any other step of formation.

Applicant teaches tubing is commercially made by extruding alloy ingots which have optionally been homogenized prior to extrusion (page 1, lines 11-17). Therefore, as Applicant clearly teaches it is commercially known to homogenize ingots prior to extrusion to form tubing, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to homogenize the ingots of Bjorneklett et al. prior to extrusion but after the layers are added to form the taught tubing.

In addition, Kawabe et al. teach tubular elements of a heat exchanger made of an aluminum alloy. The aluminum alloy comprises Si, Mn, Fe, Ti, Cu, and Al in amounts overlapping the claimed ranges (column 1, lines 51-58). The alloy may be extruded into the shape of tubing (column 3, line 29) and brazed to fin members (Example beginning at column 4). Further, the alloy is homogenized which is considered to produce the equivalent product to the claimed product which is homogenized at a particular temperature range (column 4, line 24). Therefore, as both Applicant and Kawabe et al. clearly teach it is commercially known to homogenize ingots prior to extrusion to form tubing, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to homogenize the ingots of Bjorneklett et al. prior to extrusion but after the layers are added to form the taught tubing.

Please note, claims 1 and 2 contain product by process language. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between

the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Claim 2 is rejected under 35 U.S.C. 102(a or e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bjorneklett et al. (WO02/090031).

Bjorneklett et al. teach strong and durable aluminum alloy brazing sheets used to form tubes for heat exchangers. The aluminum alloy comprises Mn, Si, Fe, Zn, Cu, Ti, and Al in amounts overlapping the claimed ranges (page 5, lines 6-13). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of "0". As such, the presence of these remaining elements is not required as claimed. The alloy may be brazed to fin members.

As an alternative to the interpretation set forth above, Bjorneklett et al. do not appear to teach extruding the alloy. However, the alloy is formed into a tube (page 5, lines 6-13). It is the Examiner's position that the physical product of a tube as taught by Bjorneklett is equivalent to a tube of the claimed alloy formed by extrusion.

Please note, the claimed extrusion requirement is a product by process limitation. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product

was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Claims 3-8 are rejected under 35 U.S.C. 103(a) as obvious over Bjorneklett et al. (WO02/090031) in view of Applicant's admissions and Kawabe et al. (US 4,991,647), and further in view of Koisuka et al. (US 4,620,590).

Bjorneklett et al. in view of Applicant's admissions and Kawabe et al. teach strong and durable aluminum alloy brazing sheets extruded to form tubes for heat exchangers as described above.

Regarding claim 3, the fin members comprise a second aluminum alloy containing Si, Fe, Cu, Mn, Zn, and Al in amounts overlapping those found in an AA3003 type alloy (page 5, lines 14-21). For this comparison Koisuka et al. is provided as a teaching reference as they teach the composition of an AA3003 alloy at column 1, lines 46-48. With respect to the claimed increase in Zn, Bjorneklett et al. teach Zn is present in the range of 0.1 to 2.0 wt % (column 1, line 18). The tubes exhibit corrosion protection and the fins are galvanically sacrificial as claimed.

Regarding claim 4, the tubular elements include a Mn content of 0.7 to 1.5 wt % (page 5, line 10) and the fin members include a Mn content of 0.7 to 1.5 wt % (page 5,

lines 17-18). Therefore values within these ranges are taught that fulfill the claimed relationship in Mn content. For example, a Mn_{fin} content of 1.5 wt % would fulfill the claimed relationship for any value of $0.7< Mn_{tube} <= 1.5$ wt %.

Regarding claim 5, the fin Cu content is 1.0 wt % or less (page 5, line 19).

Regarding claim 6, as like materials are used in a like manner to the claims, the galvanic current from fin to tube is expected to be as claimed.

Regarding claims 7-8, the Mn content of the tube forming first aluminum alloy is 0.7 to 1.5 wt % (page 5, line 10).

Claims 3-8 are rejected under 35 U.S.C. 102(a or e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bjorneklett et al. (WO02/090031) in view of Koisuka et al. (US 4,620,590).

As an alternative to the rejections set forth above, Bjorneklett et al. teach strong and durable aluminum alloy brazing sheets forming tubes for heat exchangers equivalent to the extruded tubes clamed as described above.

Regarding claim 3, the fin members comprise a second aluminum alloy containing Si, Fe, Cu, Mn, Zn, and Al in amounts overlapping those found in an AA3003 type alloy (page 5, lines 14-21). For this comparison Koisuka et al. is provided as a teaching reference as they teach the composition of an AA3003 alloy at column 1, lines 46-48. With respect to the claimed increase in Zn, Bjorneklett et al. teach Zn is present in the range of 0.1 to 2.0 wt % (column 1, line 18). The tubes exhibit corrosion protection and the fins are galvanically sacrificial as claimed.

Regarding claim 4, the tubular elements include a Mn content of 0.7 to 1.5 wt % (page 5, line 10) and the fin members include a Mn content of 0.7 to 1.5 wt % (page 5, lines 17-18). Therefore values within these ranges are taught that fulfill the claimed relationship in Mn content. For example, a Mn_{fin} content of 1.5 wt % would fulfill the claimed relationship for any value of $0.7< Mn_{tube} <= 1.5$ wt %.

Regarding claim 5, the fin Cu content is 1.0 wt % or less (page 5, line 19).

Regarding claim 6, as like materials are used in a like manner to the claims, the galvanic current from fin to tube is expected to be as claimed.

Regarding claims 7-8, the Mn content of the tube forming first aluminum alloy is 0.7 to 1.5 wt % (page 5, line 10).

Claims 1-2 are rejected under 35 U.S.C. 103(a) as obvious over Anthony et al. (US 3,878,871) in view of Applicant's admissions and Kawabe et al. (US 4,991,647).

Anthony et al. teach tubular elements of a heat exchanger made of a brazed aluminum alloy (column 3, lines 4-6). The brazed aluminum alloy is formed of two alloys (a core material and a cladding material) each comprised of Mn, Si, Cu, Zn, Ti, Fe, and Al in amounts overlapping the claimed ranges (Table I; column 1, lines 33-36). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of "0". As such, the presence of these remaining elements is not required as claimed. Thus either of the core material or the cladding material fulfills the requirements for the claimed first alloy.

Regarding claims 1 and 2, Anthony et al. do not appear to teach extruding the alloy. However, the alloy is formed into a tube (column 3, lines 4-6). It is the Examiner's position that the physical product of a tube as taught by Anthony et al. is equivalent to a tube of the claimed alloy formed by extrusion.

Further, regarding claim 1, the alloy is homogenized (see Examples I and III) with an exemplary temperature range provided that is different from the temperature range claimed. It is the Examiner's position that the homogenized product of Anthony et al. is considered equivalent to the claimed homogenized product.

Applicant teaches tubing is commercially made by extruding alloy ingots which have optionally been homogenized prior to extrusion (page 1, lines 11-17). Therefore, as Applicant clearly teaches it is commercially known to homogenize ingots prior to extrusion to form tubing, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to homogenize the alloys of Anthony et al. prior to extrusion to form the taught tubing.

In addition, Kawabe et al. teach tubular elements of a heat exchanger made of an aluminum alloy. The aluminum alloy comprises Si, Mn, Fe, Ti, Cu, and Al in amounts overlapping the claimed ranges (column 1, lines 51-58). The alloy may be extruded into the shape of tubing (column 3, line 29) and brazed to fin members (Example beginning at column 4). Further, the alloy is homogenized which is considered to produce the equivalent product to the claimed product which is homogenized at a particular temperature range (column 4, line 24). Therefore, as both Applicant and Kawabe et al. clearly teach it is commercially known to homogenize brazing sheets prior

to extrusion to form tubing, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to homogenize the brazing sheets of Anthony et al. prior to extrusion but after the layers are added to form the taught tubing.

Please note, claims 1 and 2 contain product by process language. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Anthony et al. (US 3,878,871).

Anthony et al. teach tubular elements of a heat exchanger made of a brazed aluminum alloy (column 3, lines 4-6). The brazed aluminum alloy is formed of two alloys (a core material and a cladding material) each comprised of Mn, Si, Cu, Zn, Ti,

Fe, and Al in amounts overlapping the claimed ranges (Table I; column 1, lines 33-36). The remaining claimed elements are recited in the range of "up to" x%, which includes the value of "0". As such, the presence of these remaining elements is not required as claimed. Thus either of the core material or the cladding material fulfills the requirements for the claimed first alloy.

As an alternative to the arguments set forth above, regarding claims 1 and 2, Anthony et al. do not appear to teach extruding the alloy. However, the alloy is formed into a tube (column 3, lines 4-6). It is the Examiner's position that the physical product of a tube as taught by Anthony et al. is equivalent to a tube of the claimed alloy formed by extrusion.

Further, regarding claim 1, the alloy is homogenized (see Examples I and III) with an exemplary temperature range provided that is different from the temperature range claimed. It is the Examiner's position that the homogenized product of Anthony et al. is considered equivalent to the claimed homogenized product.

Please note, claims 1 and 2 contain product by process language. The above arguments establish a rationale tending to show the claimed product is the same as what is taught by the prior art. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964,966. Once the Examiner provides a

rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113.

Claims 3-8 are rejected under 35 U.S.C. 103(a) as obvious over Anthony et al. (US 3,878,871) in view of Applicant's admissions and Kawabe et al. (US 4,991,647), and further in view of Koisuka et al. (US 4,620,590).

Anthony et al. in view of Kawabe et al. teach tubular elements of a heat exchanger made of a brazed and extruded aluminum alloy as described above.

Anthony et al. do not teach the claimed composition of the fin.

Regarding claim 3, Kawabe et al. teach fin members of a heat exchanger comprising a second aluminum alloy containing Si, Fe, Cu, Mn Zn, and Al in amounts overlapping those found in an AA3003 type alloy (column 1, lines 58-68). For this comparison Koisuka et al. is provided as a teaching reference as they teach the composition of an AA3003 alloy at column 1, lines 46-48. With respect to the claimed increase in Zn, Kawabe et al. teach Zn is present in the range of 0.1 to 2.0 wt % (column 1, lines 62-63). Therefore, as Kawabe et al. clearly teach a fin composition suitable for use in a heat exchanger which is easily manufactured and has improved mechanical strength, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the fin of Kawabe et al. in association with the

tubular elements of Anthony et al. in view of Kawabe et al. to form a functional heat exchanger as described by Anthony et al.

As like materials are used in a like manner as claimed, the tubes are expected to exhibit corrosion protection and the fins are expected to be galvanically sacrificial as claimed.

Regarding claim 4, the tubular elements of Anthony et al. include a Mn content in the core material of 0.2 to 0.8 wt % (Table I) and in the cladding material of 0.8 to 1.2 wt % (Table II). Further, the fin members of Kawabe et al. include a Mn content of 0.2 to 1.5 wt % (column 1, lines 60-61). Therefore values within these ranges are taught that fulfill the claimed relationship in Mn content. For example, a Mn_{fin} content of 1.0 wt % would fulfill the claimed relationship for any value of $0.2< Mn_{tube} <= 0.8$ wt % for the core material. In the alternative, a Mn_{fin} content of 1.5 wt % would fulfill the claimed relationship for any value of $0.8<= Mn_{tube} <= 1.5$ wt % for the cladding material

Regarding claim 5, Kawabe et al. teach the Cu content of the fin is 0.05 wt % or less (column 1, line 66).

Regarding claim 6, as like materials are used in a like manner to the claims, the galvanic current from fin to tube is expected to be as claimed.

Regarding claims 7-8, Anthony et al. teach the Mn content in the core material is 0.2 to 0.8 wt % (Table I) and in the cladding material is 0.8 to 1.2 wt % (Table II).

Claims 3-8 are rejected under 35 U.S.C. 103(a) as obvious over Anthony et al. (US 3,878,871) in view of Applicant's admissions and Kawabe et al. (US 4,991,647), and further in view of Garcia (US 5,351,750) and Koisuka et al. (US 4,620,590).

Anthony et al. in view of Kawabe et al. teach tubular elements of a heat exchanger made of a brazed and extruded aluminum alloy as described above.

Anthony et al. do not teach the claimed composition of the fin.

Regarding claim 3, Garcia teaches fin members of a heat exchanger comprising an AA3003 type alloy with an addition of 1.5% zinc (column 3, lines 25-26). Koisuka et al. is provided as a teaching reference as they teach the composition of an AA3003 alloy at column 1, lines 46-48. Therefore, as Garcia clearly teach a fin composition for a heat exchanger is "typically' composed of an AA3003 alloy with an addition of 1.5% zinc, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the fin of Garcia in association with the tubular elements of Anthony et al. in view of Kawabe et al. to form a functional heat exchanger as described by Anthony et al.

As like materials are used in a like manner as claimed, the tubes are expected to exhibit corrosion protection and the fins are expected to be galvanically sacrificial as claimed.

Regarding claim 4, the tubular elements of Anthony et al. include a Mn content in the core material of 0.2 to 0.8 wt % (Table I) and in the cladding material of 0.8 to 1.2 wt % (Table II). Further, the fin members of Garcia are formed of AA3003 alloy which includes a Mn content of 1.0 to 1.5 wt % (Garcia at column 3, lines 25-26; Koisuka et al.

at column 1, lines 46-48). Therefore values within these ranges are taught that fulfill the claimed relationship in Mn content. For example, a Mn_{fin} content of 1.0 wt % would fulfill the claimed relationship for any value of 0.2< Mn_{tube} <= 0.8 wt % for the core material. In the alternative, a Mn_{fin} content of 1.5 wt % would fulfill the claimed relationship for any value of 0.8<= Mn_{tube} <= 1.5 wt % for the cladding material

Regarding claim 5, the fin members of Garcia are formed of AA3003 alloy which includes a Cu content of 0.05-0.20 wt % (Garcia at column 3, lines 25-26; Koisuka et al. at column 1, lines 46-48).

Regarding claim 6, as like materials are used in a like manner to the claims, the galvanic current from fin to tube is expected to be as claimed.

Regarding claims 7-8, Anthony et al. teach the Mn content in the core material is 0.2 to 0.8 wt % (Table I) and in the cladding material is 0.8 to 1.2 wt % (Table II).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON S. AUSTIN whose telephone number is (571)272-8935. The examiner can normally be reached on Monday-Friday: 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Aaron S Austin/
Examiner, Art Unit 1794